STRUKTUR VERTIKAL HUJAN DI SUMATERA DAN LAUTAN SEKITAR BERDASARKAN DATA SATELIT TRMM-PR

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ABSTRAK

Struktur vertikal hujan di Sumatera dan lautan sekitar diteliti menggunakan satelit *Tropical Rainfall Measuring Mission* (TRMM) *Precipitation Radar* (PR). Penelitian dilakukan pada kawasan 10˚LS-10˚LU dan 85˚BT-110˚BT dengan memanfaatkan data TRMM 2A25 selama tiga tahun (2011-2013) yang diamati dengan gradien radar reflectivity (Z) dan kontur Z dalam bentuk *Contoured Frequency by Altitude Diagrams* (CFAD). Struktur vertikal hujan secara umum memperlihatkan perbedaan antara daratan Sumatra dan lautan sekitar. Di daratan radar *reflectivity* (Z) sebagian besar menurun terhadap penurunan ketinggian (*downward deacreasing*/DD) sedangkan lautan sebaliknya (*downward increasing*/DI). Dengan demikian, pertumbuhan hujan di daratan Sumatera lebih kecil dibandingkan lautan sekitar. Pola DD dan DI dipengaruhi oleh tipe hujan (*stratiform*, *deep convective* dan *shallow convective)* dan musim. Tingkat pertumbuhan hujan paling rendah terjadi pada *stratiform* sedangkan yang paling tinggi adalah *shallow convective*. Hujan *stratiform* dan *shallow convective* paling banyak terjadi selama Desember-Januari-Februari (DJF), sedangkan *deep convective* selama September-Oktober-November (SON). Pola DD dominan terjadi pada *stratiform* dengan pertumbuhan hujan terendah yaitu selama Juni-Juli-Agustus (JJA) sedangkan dua tipe lainnya pertumbuhan hujannya lebikh tinggi (gradien Z lebih besar) dimana untuk *deep convective* tertinggi teramati selama DJF dan *shallow convective* selama JJA. Hujan *stratiform* tidak menunjukan perbedaan distribusi spasial yang signifikan. *Deep convective* memperlihatkan pola DD yang dominan di darat terutama selama SON. Kemudian, *shallow convective* memiliki pola DI yang dominan terutama pada Samudera Hindia bagian selatan dan paling dominan selama JJA.

Kata kunci : Struktur vertikal hujan, TRMM 2A25, Sumatera

VERTICAL STRUCTURE OF PRECIPITATION OVER SUMATRA AND SURROUNDING OCEAN FROM TRMM-PR DATA

ABSTRACT

The vertical structures of precipitation over Sumatra and surrounding ocean (10˚S-10˚N and 85˚-110˚E) were examined using three years (2011-2013) observation of the Tropical Rainfall Measuring Mission (TRMM) Precipitation Radar (PR) satellite. The structure was observed using the radar reflectivity (Z) of TRMM 2A25 data. Gradient Z and Contoured Frequency by Altitude Diagrams (CFAD) of Z were used to examine the vertical structure of precipitation. The rain structure over the land of Sumatra and the surrounding ocean is different. On the land Z mostly decrease with decreasing height (DD) while over coean downward increases (DI) is more dominant. Thus, the growth of rain to the surface over the mainland of Sumatra is smaller than the surrounding ocean. DD and DI patterns are influenced by rain types and seasons. The lowest rainfall growth rate occurs in the stratiform rain while the highest is observed during shallow convective rain. The stratiform and shallow convective rains occur most frequent during December-January-February (DJF), while deep convective is more dominnat during September-October-November (SON). The dominant DD pattern occurs in the stratiform with the lowest rainfall growth (large DD) is observed during June-July-August (JJA). Deep and shallow convective rains have larger growth of precipitation to the surface than stratiform rain indicated by larger gradient. The largest gradient deep convective is observed during DJF and for shallow convective during JJA. The stratiform rain does not show any significant spatial variation. Deep convective shows significant spatial variation in which the dominant DD pattern is observed over land especially during SON. Furthermore, shallow convective rain has the dominant DI pattern especially over the south Indian Ocean and most dominant during JJA.

Keyword : Vertical precipitation structure, TRMM 2A25, Sumatra.